PB89-128391

Superfund Record of Decision (EPA Region 9)
Operating Industries, California
November 1987. Second Remedial Action

(U.S.) Environmental Protection Agency
Washington, DC

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U.S. Department of Commerce
National Technical Information Service
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Office of
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EPA/ROD/R09-88/017
November 1987

EPA

Superfund Record of Decision:

Operating Industries, CA

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16. Abstract (Limit: 200 words)

The Operating Industries, Inc. (OII) site, consisting of a 190-acre landfill, is located in Monterey Park, California. The City of Montebello, which borders the southern parcel of the landfill, has a population of 52,929 residents. Several residences are located immediately adjacent to the landfill boundaries. Between 1948 and 1984, the landfill was used for the disposal of municipal and industrial waste. Over its 36-year life span, the OII landfill has accepted several types of waste, to include: residential and commercial refuse; water-insoluble, nondecomposable inert solids; liquid wastes; various hazardous wastes including waste water treatment sludge from production of chrome oxide green pigment; and slop oil emulsion solids and tank bottom sludges (leaded) from petroleum refining operations. Beginning in 1979, Getty Synthetic Fuels, Inc. (GSF) extracted gas from the landfill for processing and sale. After several permitting denials, GSF abandoned the gas extraction operations in March 1987. EPA took over operations of the GSF system the following month, and has been conducting site control and monitoring (SCM) activities. In addition, EPA has conducted a number of emergency actions to mitigate potential threats to public health and the environment. Both landfill gas and leachate are generated by the OII site. Since October 1984, collected leachate has been stored onsite in tanks and transported to a
(See Attached Sheet)

17. Document Analysis a. Descriptors

Record of Decision
Operating Industries, CA
Second Remedial Action
Contaminated Media: leachate
Key Contaminants: VOCs

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report) None	21. No. of Pages 45
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EPA/ROD/R09-88/017
Operating Industries, CA
Second Remedial Action

16. ABSTRACT (continued)

permitted offsite treatment facility. Approximately 10,000 gallons of leachate will be collected before implementation of a final site remedy. The leachate generated contains VOCs including: benzene, TCE, toluene, and vinyl chloride.

The selected remedial action for this site includes onsite treatment of leachate and other collected hazardous liquids by air stripping and granular activated carbon adsorption in a facility constructed at onsite location B with discharge to the Los Angeles County Sanitation District sewerage system. The estimated five-year capital cost for this remedial action is $1,900,000 with estimated five-year annual O&M of $700,000.

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION: Operating Industries, Inc., Monterey Park, California

STATEMENT OF PURPOSE:

This decision document represents the selected remedial action for the Operating Industries, Inc. site developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), the Superfund Amendments and Reauthorization Act of 1986 (SARA), and the National Oil and Hazardous Substances Contingency Plan (NCP) (40 C.F.R., Part 300).

The State of California has concurred with the selected remedy.

STATEMENT OF BASIS:

This decision is based upon the administrative record (index attached). The attached index identifies the items which comprise the administrative record upon which the selection of a remedial action is based.

DESCRIPTION OF THE SELECTED REMEDY:

The selected remedy consists of an on-site leachate treatment using the Alternative #5 treatment process at a facility to be designed and contructed at location B as presented in the Leachate Management Feasibility Study. The selected remedy represents an operable unit consistent with the final remedial action.

Declarations

The selected remedy is protective of human health and the environment and has been determined to be cost effective and consistent with the final remedial action. This remedy attains the legally applicable or relevant and appropriate requirements of other Federal and State public health or environmental laws. This remedy satisfies the preference for treatment that reduces toxicity, mobility, or volume as a principal element. Finally, it is determined that this remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

11.16.87
Date

John Wise
John Wise
Deputy Regional Administrator
U.S. EPA Region 9

Decision Summary

Operating Industries, Inc.

Monterey Park, California

November 1987

Prepared by Kevin I. Dick

Enforcement Response Section

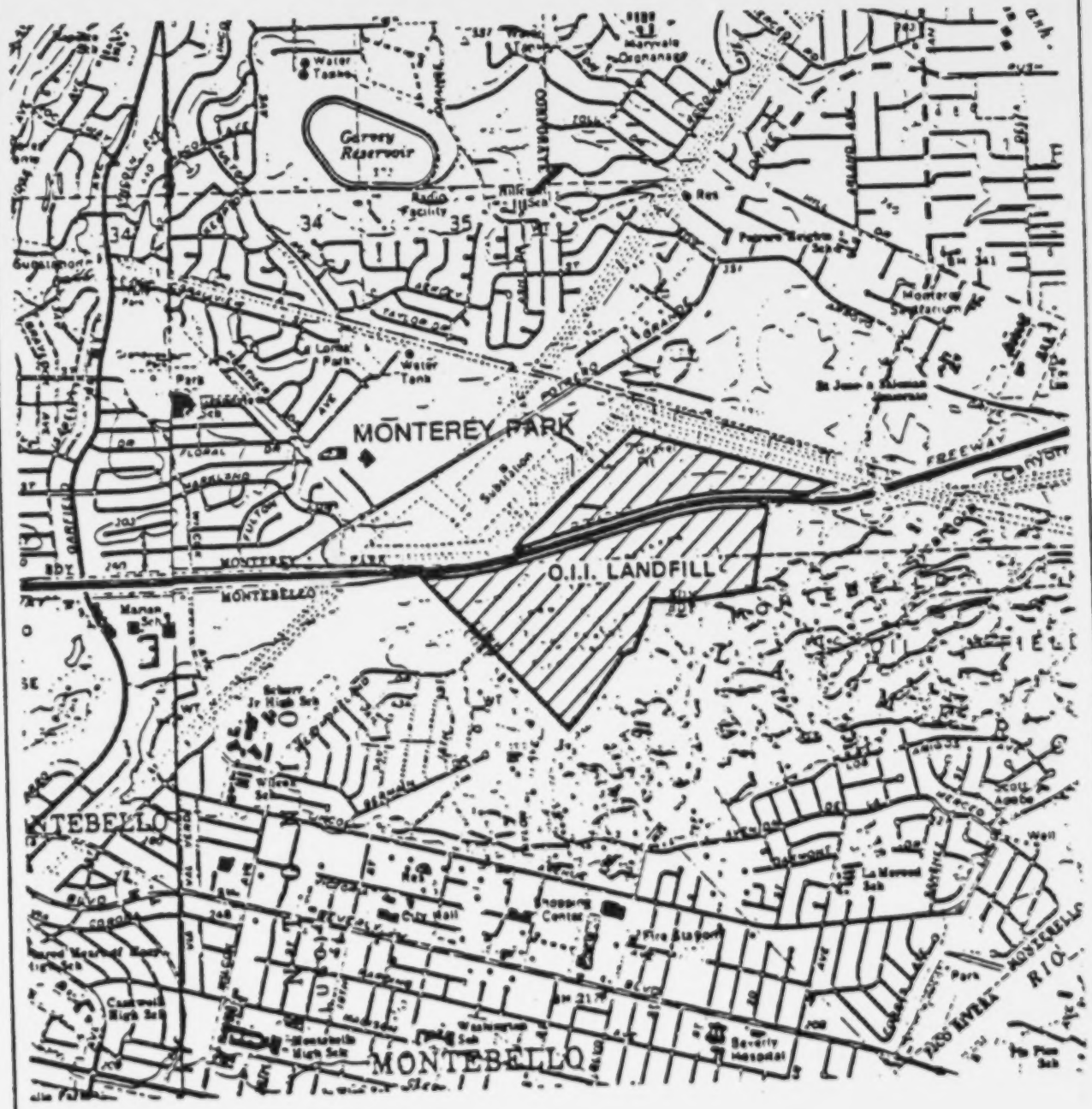
Superfund Programs Branch

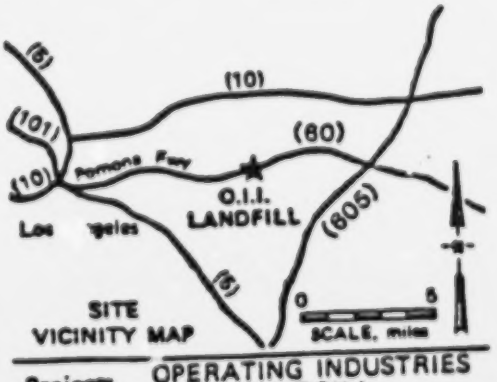
Toxics and Waste Management Division

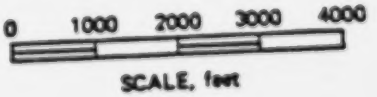
United States Environmental Protection Agency

215 Fremont Street

San Francisco, California 94105







Project: OPERATING INDUSTRIES LANDFILL

OPERATING INDUSTRIES LANDFILL

LOCATION MAP

CDM

Figure 1

Decision Summary
Operating Industries, Inc. Site
Monterey Park, California

Site Location and Description

The Operating Industries, Inc. (OII) site is located approximately 10 miles east of Los Angeles in Monterey Park, California (see Figure 1). The OII site consists of a 190-acre landfill which was operated from 1948 to 1984 and was used for disposal of municipal and industrial waste. The landfill contains hazardous waste and hazardous substances and was listed on the National Priorities List in May, 1986.

The Pomona Freeway divides the site into a 45-acre northern parcel and a 145-acre southern parcel. The top of the south parcel of the landfill is about 150 to 250 feet above the ground surface and the bottom of the landfill is about 200 feet below ground surface. Elevation of the upper surface of the south parcel of the landfill is about 620 to 640 feet above Mean Sea Level (MSL).

The OII site is presently owned by the former operators, Operating Industries, Inc. The EPA has been conducting site control and monitoring (SCM) activities at the site since OII ceased performing these activities in May, 1986. In addition, EPA has conducted a number of emergency actions to mitigate potential threats to public health and the environment. The site has become more stabilized as a result of the SCM activities and the emergency actions.

The City of Monterey Park has a population of 54,338 (1980 Census). The City of Montebello, which borders the southern parcel of the landfill, has a population of 52,929 (1980 Census). Several residences of Montebello are located immediately adjacent to the boundaries of the landfill. Within a three-mile radius of the site, there are approximately 53,000 residences.

The perimeter of the southern parcel of the landfill is fenced. Entrance is restricted and 24-hour security is provided. Several businesses are currently operating on the northern 45-acre parcel. These businesses have a lease arrangement with the operators.

Site History

Landfill operations at the site began in 1948. From 1948 to 1952, the site was used by the City of Monterey Park to dispose of municipal garbage. Prior to 1948, the site and surrounding areas were quarried for sands and gravels. In January 1952, the

site became a privately-owned landfill under the ownership of OII. From 1952 to 1984, the site was operated as a landfill for municipal and industrial liquid and solid wastes. In 1974, the Ponoma Freeway was constructed. The freeway split the landfill into a north and a south parcel. In June 1975, waste disposal operations were curtailed in the northern parcel. Operations were then limited to the area south of the freeway.

On October 6, 1954, the Regional Water Quality Control Board (RWQCB) first permitted disposal of liquids at OII which was known as Monterey Disposal Company Dump at that time. Some of these liquids, and some liquid industrial wastes disposed prior to the Board's permit, are considered to be hazardous by current Federal and State statutes and regulations. In 1975, a 32-acre area in the western part of the southern parcel was established as the area of liquid waste disposal and was permitted to accept Class II-1 wastes. Waste disposal operations ceased in October 1984.

The OII site was placed on the California Hazardous Waste Priority List in January 1984. The OII site was proposed for the Federal National Priority List (NPL) of uncontrolled hazardous waste sites in October 1984 and was finalized on the NPL in May 1986.

Over its 36-year life span, the OII landfill has accepted the following types of wastes: residential and commercial refuse; water-insoluble, nondecomposable inert solids; liquid wastes; various hazardous wastes including wastewater treatment sludge from production of chrome oxide green pigment; and slop oil emulsion solids and tank bottom sludges (leaded) from petroleum refining operations.

In 1974, Getty Synthetic Fuels, Inc. (GSF) entered into a contractual relationship with OII for the extraction of gas from the landfill for processing and sale to Southern California Gas Company. GSF's gas extraction system went into operation in 1979. In March, 1986, GSF ceased its gas processing activities and applied to the South Coast Air Quality Management District (SCAQMD) for a permit to construct an electrical generating plant. At that time, GSF began to flare the extracted gas in an incinerator until final permits for construction of the electrification plant were issued. GSF also applied for a permit from the City of Monterey Park for discharge of treated effluent to the sewer. In January, 1986 the City of Monterey Park denied GSF's permit. As a result, GSF decided to abandon their extraction operations at the OII landfill as of March 1, 1987. EPA took over operation of the GSF system in June, 1987.

Both landfill gas and leachate are generated by the OII site. From April 1983 to October 1984, about 25,000 gallons of leachate per day were collected by OII's leachate collection system and disposed of by mixing with the incoming solid waste. Since then, collected leachate has been stored on-site in Baker tanks, and transported to a permitted off-site treatment facility.

The leachate generated at the OII site is a hazardous waste as defined by RCRA 261.3 regulations and contains hazardous organic constituents such as vinyl chloride, trichloroethylene, benzene, and toluene.

Land uses around the landfill began to undergo significant changes in 1974. These changes included construction of the Pomona Freeway (1974), and increased residential development within Montebello City limits to the southwest (1975) and south (1976) of the facility. A residential area is directly adjacent to portions of the southern and western boundaries of the landfill.

Discussion of Past Activities

A number of site problems have been identified by State and Federal regulatory agencies. These include:

- Hazardous leachate seepage and breakthrough on the landfill slopes.
- Subsurface and off-site migration of leachate.
- High landfill gas (methane) levels exceeding the lower explosive limit in nearby residential areas.
- Vinyl chloride present in ambient air emissions and in subsurface gas on-site and off-site.
- Underground fires and associated subsidence on-site.
- Slope instability and erosion problems.
- Surface runoff from the elevated fill area.
- Groundwater contamination from leachate and migrating landfill gas.
- Noxious and offensive odors on- and off-site.

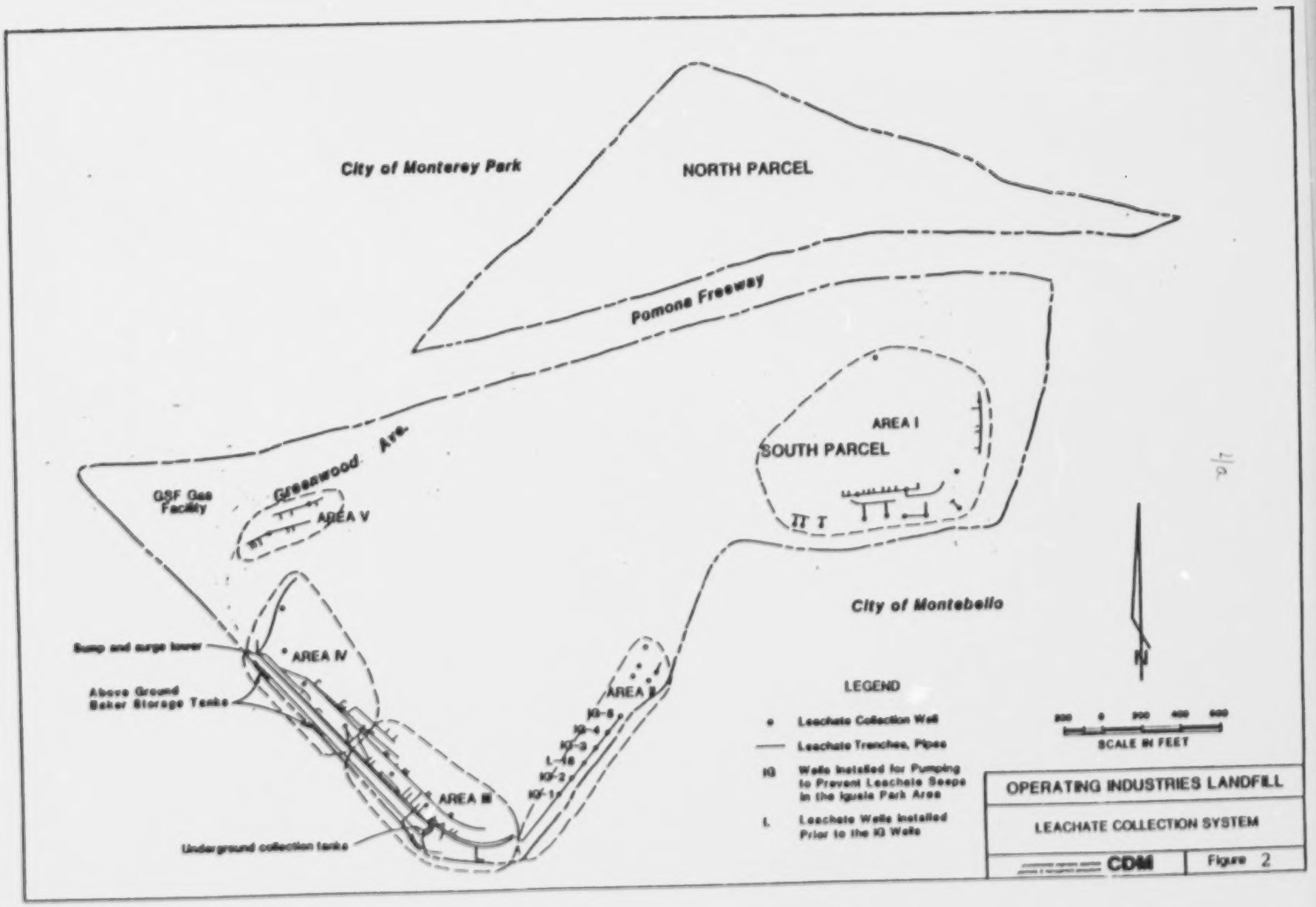
Partial control measures performed on-site by the owner in prior years include:

- Installation of a leachate collection system.
- Development of an air-dike air injection system on the west side of the site to control subsurface gas migration.
- Installation of gas extraction wells around the perimeter (except for the air-dike area) of the site and a gas flaring station.
- Site contouring, slope terracing, and vegetation.
- Covering refuse with additional fill.

The partial control measures instituted by the owner were insufficient to maintain site integrity and the EPA, therefore, instituted emergency response actions in order to protect public health, welfare and the environment. Emergency actions performed to date by EPA include:

- Slope stability and erosion control improvements, including construction of a toe buttress.
- Surface runoff and drainage improvements.
- Rehabilitation of the main flare station.
- Site security.
- Placement of vented water meter box covers off-site.

The owner/operator's ability to control the environmental problems and maintain the control systems began to diminish significantly in late 1984 when it notified EPA and the California Department of Health Services (DOHS) that it could no longer afford to truck leachate offsite for treatment. EPA conducted the leachate trucking and treatment for several months. Subsequently, DOHS assumed responsibility for this activity, while OII continued to attempt to operate and maintain remaining on-site control systems. On May 19, 1986, OII notified the State that it intended to discontinue all site control and monitoring activities on the site except irrigation. The EPA therefore assumed these activities on May 20, 1986. SCM activities then continued to be performed by EPA with the State DOHS providing leachate trucking and treatment and OII providing on-site irrigation. On December 15, 1986, the State transferred responsibility for leachate trucking and treatment to the EPA. EPA has also requested that OII allow EPA to assume full responsibility for irrigation of the site because EPA believes OII has not properly conducted the activity.


City of Monterey Park
NORTH PARCEL
Pomona Freeway
Greenwood Ave.
AREA I
SOUTH PARCEL
GSF Gas Facility
AREA V
City of Montebello
Sump and surge tower
AREA IV
Above Ground Baker Storage Tanks
AREA II
IG-5
IG-4
IG-3
L-16
IG-2
IG-1
AREA III
Underground collection tanks
LEGEND
Leachate Collection Well
Leachate Trenches, Pipes
IG Wells Installed for Pumping to Prevent Leachate Seeps in the Iguala Park Area
L Leachate Wells Installed Prior to the IG Wells
SCALE IN FEET
OPERATING INDUSTRIES LANDFILL
LEACHATE COLLECTION SYSTEM
CDM
Figure 2

CURRENT SITE CONDITIONS

Interim actions have been undertaken at the landfill to control and prevent leachate seeps from occurring. In 1980, both the South Coast Air Quality Management District, and the California Waste Management Board ordered OII to construct a leachate collection system. A leachate collection system was installed in the early 1980's by OII to control surface seepage that was occurring on- and off-site. The system consists of shallow gravel trenches which passively collect leachate to prevent surface seepage, unlined gravel sumps, and underground collection tanks. Wells were installed by OII and EPA above the Iguala Park area to intercept leachate that was appearing as surface seepage down-slope in Iguala Park. There are five areas on the site in which leachate collection systems are located. These are shown on Figure 2 and are detailed below.

Area I

Area I on the southeast side of the site consists of trenches, perforated pipes, and leachate disposal wells drilled into dry refuse. Liquid waste disposal was not permitted on this portion of the landfill. However, there have been leachate seeps within this area. With the installation of the collection system, the seeps have apparently been controlled.

Immediately south of Area I, along the base of the landfill, a toe buttress was recently constructed to stabilize the slopes. A continuous drain was installed within the toe buttress. Leachate collected from this drain is transported to one of three concrete storage tanks which is periodically pumped out by a vacuum truck.

Area II

The Area II leachate collection system in the lower south-east portion of the site consists of the six Iguala wells. The Iguala wells were installed to prevent leachate seeps in the Iguala Park area south of the OII boundary. The wells are 70 to 80 feet deep, generally extending through approximately 10 to 15 feet of landfill rubbish and into the native earth material. The wells are equipped with electrically powered submersible pumps. Leachate collected from the wells is pumped into a collection manifold pipe connecting the six wells to the underground tanks in leachate collection Area III. There are five other wells in Area II which are not connected to the collection system. In the past, leachate has been pumped from these wells into vacuum trucks. There is no record of pumping for the past several years.

Two new collection wells were installed in 1986 as part of

the emergency response actions for the site. These wells are part of the collection system installed to prevent seeps in the Iguala Park area. The wells are located 50 feet to either side of well #L-18.

Area III

The leachate collection system in Area III, on the southwest corner of the site, consists of a series of buried, perforated pipes and trenches discharging into three buried steel tanks. The buried steel tanks consist of one 3,500 gallon tank which has the upper part of both ends perforated, an 8,000 gallon tank, and a 10,000 gallon tank. Each tank can be individually emptied through pumping. The tanks are resting in a gravel bed which can also be pumped to remove leachate collected within the gravel bed surrounding the tanks. The 3,500 gallon tank, with perforations in the upper part of each end, is designed to collect leachate in the gravel bed surrounding the cluster of tanks. All three tanks are from old vacuum trucks and do not meet current regulations for underground tanks.

Southwest and down-slope of the buried tanks, along the boundary of OII, is a french drain system which flows to a 36-inch diameter unlined sump. Leachate is pumped from the sump to the buried tanks.

Area IV

Leachate collected in the buried tanks in Area III is pumped to three 20,000 gallon, above-ground storage tanks (Baker tanks) located in the vicinity of the surge tower in Area IV. Leachate is removed from the storage tanks by a vacuum truck and transported off-site for treatment and disposal. During the period from April 1983 through October 1984, the leachate was trucked to and disposed of in the active landfill working area.

The main leachate collection system in Area IV on the western side of the site is similar to the system in Area III, consisting of perforated pipe and trenches which feed to an unlined, 36-inch diameter sump in the vicinity of the surge tower. The surge tower serves as a standpipe providing adequate head to gravity flow leachate into the buried tanks in Area III.

Area V

The leachate collection system in Area V is very similar to the system in Area I, consisting of trenches, perforated pipe and leachate disposal wells drilled into dry refuse. It is believed that leachate seeps occurred in this area during the stockpiling of dirt immediately up-slope. Currently there are no surface seeps in this area.

Under the Site Control and Monitoring Remedial Action EPA will be implementing improvements and repairs to the existing shallow collection system. The present OII leachate collection system is a poorly designed system in various states of disrepair. These improvements should increase the efficiency of the collection system and consequently increase the volume of leachate collected. These improvements include:

- Replacement of the underground collection tanks. Currently, tanks from tank trucks which were buried by OII are used for leachate collection. These tanks are not suitable for continued subsurface use. These tanks are probably leaking and EPA has determined that their replacement is necessary.

- Replacement of air compressor and increased compressor capacity. A reliable compressor with increased capacity will allow for optimum performance of leachate extraction pumps.

- Replacement or modification of clogged gravel collection trenches and sumps. Gravels become clogged by oil and grease in the leachate and no longer collect leachate effectively.

- Modification and improvement of unlined sumps. Currently, one of the unlined leachate collection sumps which extends to a depth of sixty feet can only be pumped out of the upper thirty-five feet. By allowing for the entire sump volume to be pumped, modification will improve the efficiency of the sump. In addition, a sump located down-slope of the underground collection tanks may need future improvements if replacement of the underground tanks does not control leachate flow into this sump.

Surface seepage of leachate occurs at the site periodically due to failure of the existing collection system. Leachate seepage occurred in the southwest corner of the site in August, 1987. This supports EPA's contention that improvements to the collection system will lead to increased volumes of leachate collection due to improved system efficiency.

Leachate was collected by OII at a rate of 25,000 to 30,000 gallons per day during the period from April 1983, to October 1984, when the leachate was being redisposed into the landfill. Collection rates showed an initial steep decline after October 1984, which may reflect the cessation of leachate redisposal. Deterioration of the collection system may also be reflected in the decline. Since the initial decline following to cessation of leachate redisposal leachate collection rates have stabilized. Collection rates vary throughout the year but average approximately 4 to 6 thousand gallons per day.

Several factors contribute to the continued leachate production at the site:

- Metabolic liquids produced by decomposition of the waste mass;
- Liquid infiltration through the surface of the site;
- Liquids squeezed out of pore spaces as the landfill settles;
- Approximately 300,000,000 gallons of manifested liquids were deposited since 1977, and additional large volumes were deposited historically.

EPA estimates that volumes of leachate and hazardous liquids collected at OII will increase to approximately 10,000 gallons during the interim period before implementation of the final remedy for the site. This volume increase will be due primarily to improvements to the existing collection system (described above) and to improvements to collect condensate which is currently being recirculated through the landfill.

Condensate is a hazardous liquid which is generated from the cooling of moisture-saturated gas during gas extraction. Currently, limited volumes of condensate are collected at the GSF and OII flare stations. Drip legs in the gas systems currently re-inject condensate into the landfill. As collection is expanded to trap the re-injected condensate, collected volumes could increase to several thousand gallons per day.

Additional amounts of liquids will be collected as the collection system is expanded to de-water inundated gas extraction wells and perimeter gas monitoring probes. Equipment decontamination during the ongoing RI/FS and construction activities will also generate minor additional volumes of liquids which may require treatment.

A combination of these factors contribute to EPA's estimate of interim leachate collection of 10,000 gallons per day. EPA believes this is the best estimate for formulating remedial action treatment alternatives and cost comparisons.

In the future, even greater volumes of hazardous liquids could be collected due the potential need to collect and treat the following:

- Additional shallow leachate as a source control measure to prevent contamination of perched groundwater;
- Additional deep leachate as a source control measure to prevent groundwater contamination;
- Additional condensate resulting from expansion of the gas collection system;
- Additional leachate collection to enhance gas extraction.

Contamination has been detected in the groundwater in the site vicinity. Extraction and treatment of groundwater may also be required in the future. During the hydrogeological investigation, the water generated by well development, purging, and pump testing may have to be treated prior to discharge.

LEACHATE CHARACTERIZATION

Based on the review of over 70 sets of sampling data from the past 42 months (January 1983 through July 1986), the quality of leachate obtained from the OII landfill exhibits a high degree of variability. No consistent sampling and analysis program extending beyond a few months has ever been undertaken and data reviewed illustrate the lack of consistent results and difficulty in assessing the characteristics of a representative sample of leachate. Although quality assurance information on some of the leachate data was not readily available, inclusion of all results to summarize leachate quality was believed to be appropriate to fully characterize the potential range of contaminant levels which may be present in OII leachate and to therefore evaluate the degree of flexibility which must be considered for treatment.

The OII leachate can be described as a darkly colored liquid with a moderate petroleum and/or musky odor. Past analysis results have been highly variable and indicate that leachate may contain a wide array of organic and inorganic pollutants including oil and grease, volatile organics, semivolatile organics, sulfides, a variety of heavy metals, and high levels of chemical oxygen demand, suspended solids, and total dissolved solids.

A summary of the range of several selected constituents found in OII leachate is presented below:

	Range of Values (mg/L except pH)	
Parameter	Minimum	Maximum
pH	6.6	8.5
oil and grease	6	296,800
Chemical oxygen demand	750	31,000
Suspended solids	62	62,800
Total dissolved solids	7,226	16,300
Ammonia	720	927
Vinyl Chloride	ND	0.50
Methylene chloride	ND	16.3
Toluene	ND	10.0
Xylene isomers	ND	5.0
1,4-Dioxane	ND	19.0
bis(2-ethylhexyl) phthalate	ND	60.0
Phenol	ND	1.8
Sulfides	ND	13.0
Chromium	ND	4.81
Arsenic	0.026	4.52
Zinc	0.06	18.0
Sodium	2,200	4,500
Calcium	116	367

ND: Not Detected

Many of the EPA Target Compounds (TC) have been identified in OII leachate at various times during the past few years. Heavy metals such as chromium, arsenic, zinc, cadmium, copper, lead, nickel, mercury, and selenium which are TCs have been found during elemental analysis of leachate and have ranged from below detection limits to several milligrams per liter. Average and median values of heavy metals in the leachate indicate that they are commonly found in concentrations of less than one milligram per liter and are represented by common mono and divalent species such as sodium, potassium, magnesium, calcium and iron. This conclusion was further substantiatd by the high quality NEIC analysis which identified heavy metals ranging from detection limits to 340 micrograms per liter and common metals ranging from 16 to 3400 milligrams per liter.

Over one-third of the organic Target Compounds as well as a variety of non-TCs have been detected at least once in an OII leachate sample. Organics which have been frequently identified in leachate include volatile aromatic compounds such as benzene, dichlorobenzene, ethyl benzene, toluene and xylene isomers, volatile halocarbons such as 1,1-dichloroethane, methylene chloride and vinyl chloride, and other volatile constituents such as acetone, methylethyl ketone and dioxane isomers. Several semi-volatile TCs were also frequently identified including several phenol species, several phthalate esters, naphthalene, phenanthrene and 2-methylnaphthalene. These organics, along with many less frequently detected organic constituents, have been found to be present in leachate at levels ranging from detection limits to several milligrams per liter. Average and median values for organic TCs indicate that they are usually present in concentrations of several hundred micrograms per liter or less. The high quality NEIC analysis generally substantiated this conclusion although high levels of 1,4 dioxane (13 mg/l), 2methyl-2-butanol (1.4 mg/l), 2-methyl-2-propanol (2.0mg/l) and bis (2 ethylhexyl) phthalate (1.1 mg/l) were identified in this particular sample.

Several analyses for organic constituents in OII leachate have indicated the presence of a complex organic matrix which consists largely of undifferentiated weathered hydrocarbon species which are not normally identified using conventional gas chromatographic and gas chromatographic/mass spectroscopic techniques. Occasionally, analyzing laboratories have estimated the concentrations of organic acids and n-alkanes present in leachate. One set of results for a leachate sample taken in June of 1984 reported estimatd levels of butanoic, pentanoic and hexanoic acids at levels of 1.6, 1.9, and 3.1 milligrams per liter respectively. Other labs have estimated the levels of various n-alkanes (from 9 to 31 carbons) on several occasions and have reported total levels of several hundred milligrams per liter. The high quality NEIC analysis quantified the n-alkanes at a total level of 1.4 mg/l. It was also estimated, based on a total ion count for the chromatograms, that the total concentrations of hydrocarbon materials in this sample

were 70 mg/l, most of which could not be specifically identified. Analysis showed that 68 percent of the dissolved organic carbon in the NEIC leachate sample could be attributed to organic acids.

In addition to metal and organic pollutant level determination, the concentrations of many other contaminants have been quantified in samples of OII leachate. The pH of the leachate has generally been neutral or slightly basic. Oil and grease, chemical oxygen demand, and suspended solids have been found in highly variable concentrations with median values of 473 mg/l, 4,690 mg/l and 628 mg/l, respectively. Dissolved solids levels have been more consistent at mean and median levels of approximately 11,500 mg/l. Ammonia levels in OII leachate average approximately 820 mg/l based upon the two sets of results reviewed.

Based upon a review of the over 70 sets of available analytical data characterizing OII leachate, this waste was found to have a high strength character. The results were highly variable with respect to levels of specific organic and inorganic constituents, thus making the determination of a "representative sample" of leachate difficult. However, general categories of pollutants for which removal through treatment would be necessary were identified as oil and grease, metals, organics, and sulfides.

Community Relations

A history of the community relations activities at the OII site, the background on community involvement and concerns, and specific comments on the Feasibility Study and EPA's responses are found in the Responsiveness Summary.

Alternatives Evaluation

Remedial Action Objectives:

The following objectives and considerations guided the formulation of remedial action alternatives for management of leachate and other hazardous liquids collected at OII.

- The remedial action must be easily and rapidly implementable and have the potential to be integrated into the final remedy for the site.
- The alternatives must be flexible in order to manage both short- and long-term variations in the leachate collection rate and in the chemical characteristics of the leachate.
- Remedial actions which included treatment to permanently and significantly reduce the volume, toxicity, or mobility of OII leachate contaminants were preferred.

Initial Screening of Alternatives

EPA identified the following alternatives for managing leachate and other hazardous liquids collected at the Operating Industries, Inc. Superfund site:

- No Action
- Off-site disposal without treatment
- Off-site treatment
- On-site disposal without treatment
- On-site treatment

Of these alternatives, only on-site and off-site treatment remained after performing the initial screening of alternatives in the "Leachate Management Feasibility Study, Operating Industries, Inc. Landfill Site", March 1987.

The no-action alternative, which consists of termination of pumping from the Iguala Wells, the sumps in Areas III and IV, and the underground leachate collection tanks, would result in overflows and off-site seepage into nearby residential areas. Uncontrolled seeps from the south and southwest boundaries of the landfill would expose a potentially large number of people living and working in the adjacent areas to OII leachate. An analysis of the target pollutants identified in the leachate has indicated that exposure to OII leachate, leachate vapors or leachate-contaminated soil by inhalation, dermal contact or ingestion presents a potential human health hazard. The no-action alternative would endanger the environment surrounding the site by allowing leachate to contaminate air, soil, and groundwater.

The off-site disposal without treatment alternative for the OII site involves the pumping of the Iguala Wells, sumps, and underground tanks to the above-ground storage tanks which would then be hauled a minimum of 200 miles in vacuum trucks to an off-site RCRA-compliant disposal facility. This alternative was eliminated from further consideration as its cost exceeds the costs of other alternatives evaluated without providing greater protection of public health and the environment. Additionally, off-site land disposal is not a preferred method under CERCLA which establishes a preference for response actions that use treatment, reuse, or recycling. The Superfund Amendments and Reauthorization Act (SARA) states that the offsite transport and disposal of hazardous substances or contaminated materials without treatment should be the least favored alternative technology where practicable treatment technologies are available. New EPA land disposal policy prohibits land disposal of dioxins and solvents and additional restrictions will be added in the future. Thus, off-site disposal of free liquids may not be possible over the long-term.

The on-site disposal without treatment alternative involves the continued pumping of the Iguala wells, sumps, and underground tanks to the above-ground storage tanks. The leachate would then be pumped to on-site surface impoundments. On-site disposal is not a preferred alternative as it will not adequately protect public health because volatile organic constituents present in the leachate would pass into the atmosphere and pose a threat to nearby communities. Additionally, there is a proposed California state regulation forbidding the disposal of untreated hazardous wastes into evaporation ponds which could prevent on-site disposal over the long-term.

Two on-site treatment alternatives were eliminated due to their failure to meet effluent discharge requirements and/or public health concerns. The first treatment alternative was developed as a minimal treatment process and included gravity separation or clarification with discharge of effluent to the LACSD sanitary sewage system. This alternative would remove oil and grease but would not effectively remove soluble heavy metals, sulfides, cyanides, or water soluble organic constituents which would consequently be discharged to the sanitary sewer.

The second alternative eliminated consisted of the gravity separation, rapid mix coagulant addition, dissolved air flotation and filtration process train followed by air stripping without off-gas treatment and granular activated carbon adsorption with sewering of the effluent. This alternative would fail to treat off-gas from the air stripping tower. Transferring hazardous substances from the liquid to gas phase is not a permanent method of reducing the toxicity or mobility of these pollutants. In addition, uncontrolled emissions could lead to further degradation of air quality at the site and to the potential for public health problems. For these reasons, this alternative was eliminated from further consideration.

A summary of the initial screening of alternatives is presented in Table 1.

Detailed Evaluation of Alternatives

Off-site treatment and four on-site treatment alternatives were further evaluated based on the detailed evaluation criteria of the "EPA 1985 Feasibilty Study Guidance" and the factors presented in Section 121 (b)(1)(A-G) of SARA. These criteria are:

- Technical feasibility (performance, reliability, implementability)
- Institutional considerations
- Protection of public health

- Environmental protection
- Cost-effectiveness: Cost-effectiveness over the interim (5 year) period was evaluated.

The SARA Section 121 (b)(1)(A-G) factors are:

A) The long-term uncertainties associated with land disposal.

B) Goals, objectives, and requirements of the Solid Waste Disposal Act.

C) The persistence, toxicity, mobility, and propensity to bioaccummulate of hazardous substances and their constituents.

D) Short- and long-term potential for adverse health effects from human exposure.

E) Long-term maintenance costs.

F) Potential for future remedial action costs if the alternative remedial action in question were to fail.

G) Potential threat to human health and environment associated with excavation, transportation, and redisposal or containment.

Description of Alternatives

Off-site Treatment:

Off-site treatment is the method currently used to manage leachate and other hazardous liquids generated at the OII site. Leachate is hauled by vacuum truck to an off-site treatment facility where it is treated, and the effluent is discharged to the Los Angeles County Sanitation District (LACSD) sewer system. Two facilities in Southern California are currently permitted and capable of treating the leachate. The treatment process used at one of these facilities is illustrated in Figure 3.

On-site Treatment:

The on-site treatment alternative for managing OII leachate involves the construction and operation of a leachate

TABLE 1

SUMMARY OF INITIAL SCREENING OF ALTERNATIVES

Alternative	Results of Initial Screening	Reason for Elimination
No Action	Eliminated	Potential adverse public health and environmental effects
Off-site treatment	Consider further	———
Off-site disposal	Eliminated	Potential adverse public health effects, EPA policy, permanency, cost
On-site disposal	Eliminated	Potential adverse public health effects, permanency
On-site treatment		
Alt.1 - Gravity separation sewer disposal	Eliminated	Potential adverse health and environmental effects, permanency
Alt.2 - Gravity separation, coagulation addition, DAF, filtration, air stripping with off-gas treatment sewer disposal	Consider further	———
Alt.3 - Same as Alt.2 with GAC replacing air stripping/off-gas treatment	Consider further	———
Alt.4 - Same as Alt.3 with air stripping without off-gas treatment added prior to GAC	Eliminated	Potential adverse health effects, permanency
Alt.5 - Same as Alt.4 with off-gas treatment added	Consider further	———
Alt.6 - Same as Alt.5 with UF/RO added and reuse of effluent	Consider further	———

treatment facility at the landfill site. The following four alternative treatment plant configurations were evaluated for treatment of the leachate:

Alternative #2

Gravity separation --> coagulant addition --> dissolved air flotation --> air stripping with vapor phase carbon adsorption ... discharge

Alternative #3

Gravity separation --> coagulant addition --> dissolved air flotation --> filtration --> liquid phase granular activated carbon adsorption ... discharge

Alternative #5

Gravity separation --> coagulant addition --> dissolved air flotation -->filtration --> air stripping with vapor phase carbon adsorption --> liquid phase granular activated carbon adsorption ... discharge

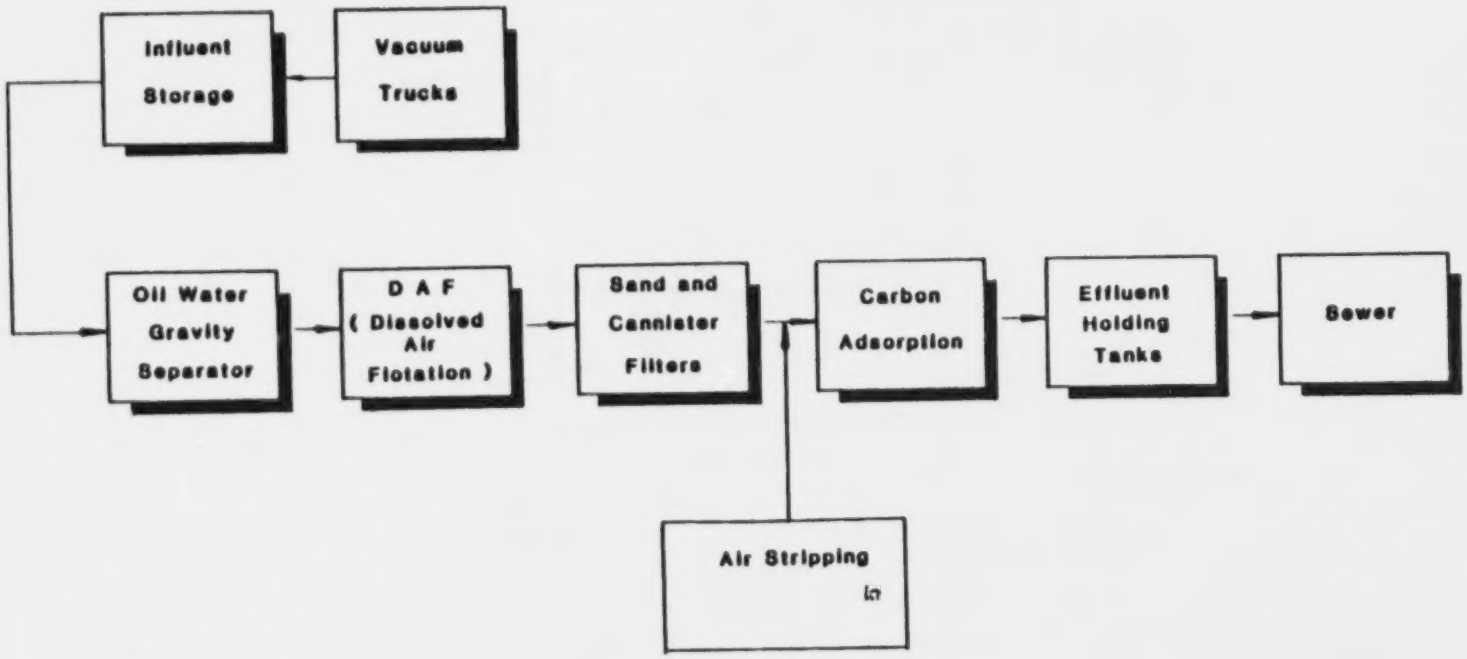
Alternative # 6

Gravity separation --> coagulant addition --> dissolved air flotation --> filtration --> air stripping with vapor phase carbon adsorption --> liquid phase granular activated carbon adsorption --> ultra-filtration --> reverse osmosis ..reuse and/or discharge

Description

The unit processes for removal of oil and grease and heavy metals are the same for the four on-site treatment alternatives (Alternatives 2,3,5 and 6). The processes for the removal of the organic compounds vary between on-site treatment Alternatives 2,3, and 5. A schematic of the Alternative 2 process train is shown in Figure 4. Without granular activated carbon (GAC) adsorption following air stripping, it is unlikely that the treated leachate would consistently meet the requirements for total toxic organic removal needed for an off-site wastewater discharge permit. However, this alternative does reduce the threat from the hazardous leachate and provides significant protection to public health and welfare and the environment.

On-site treatment Alternative 3, as depicted schematically in Figure 5, uses GAC adsorption without air stripping. The



15A

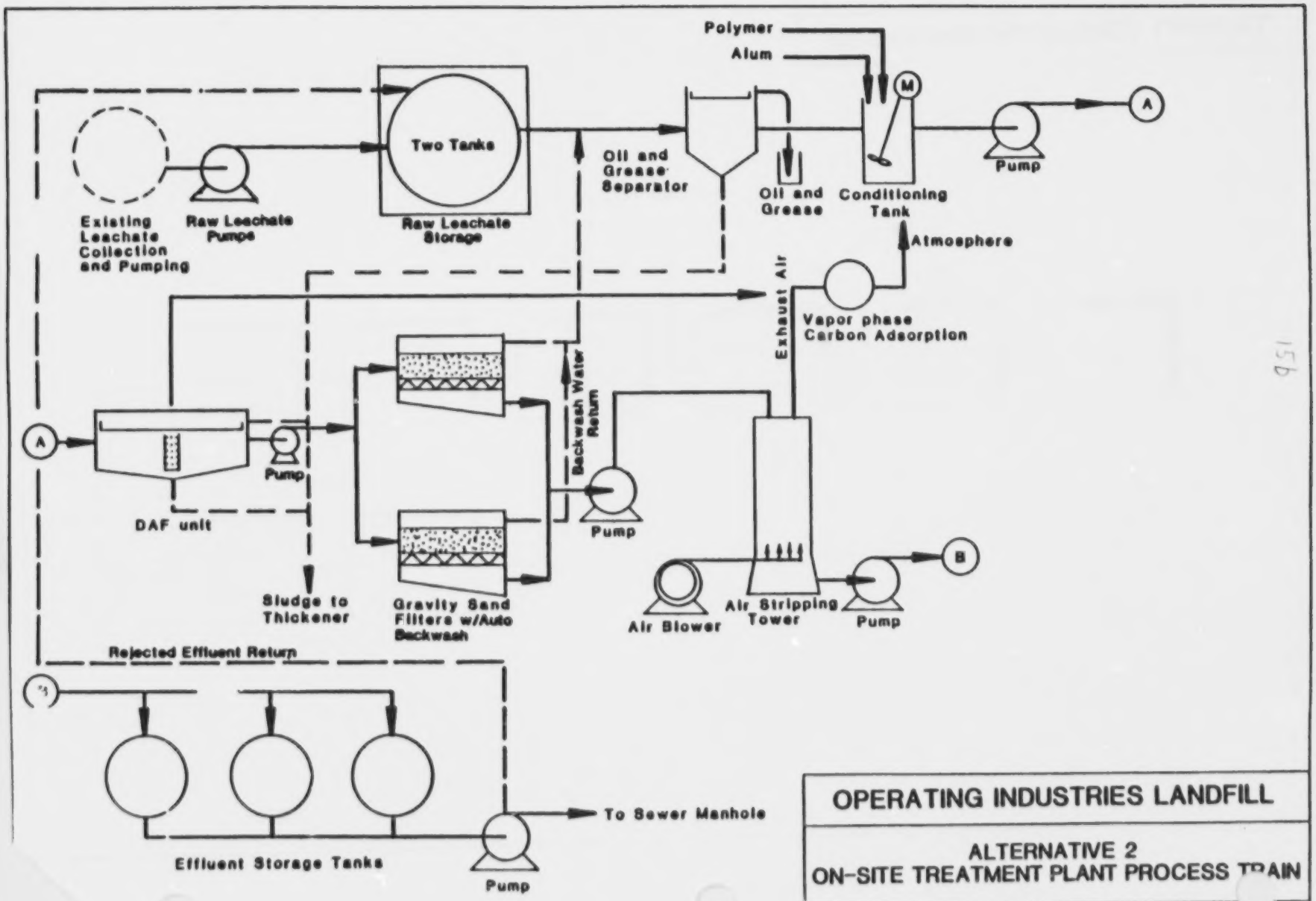
OPERATING INDUSTRIES LANDFILL

OFF-SITE

LEACHATE TREATMENT PROCESS

CDM

Figure 3

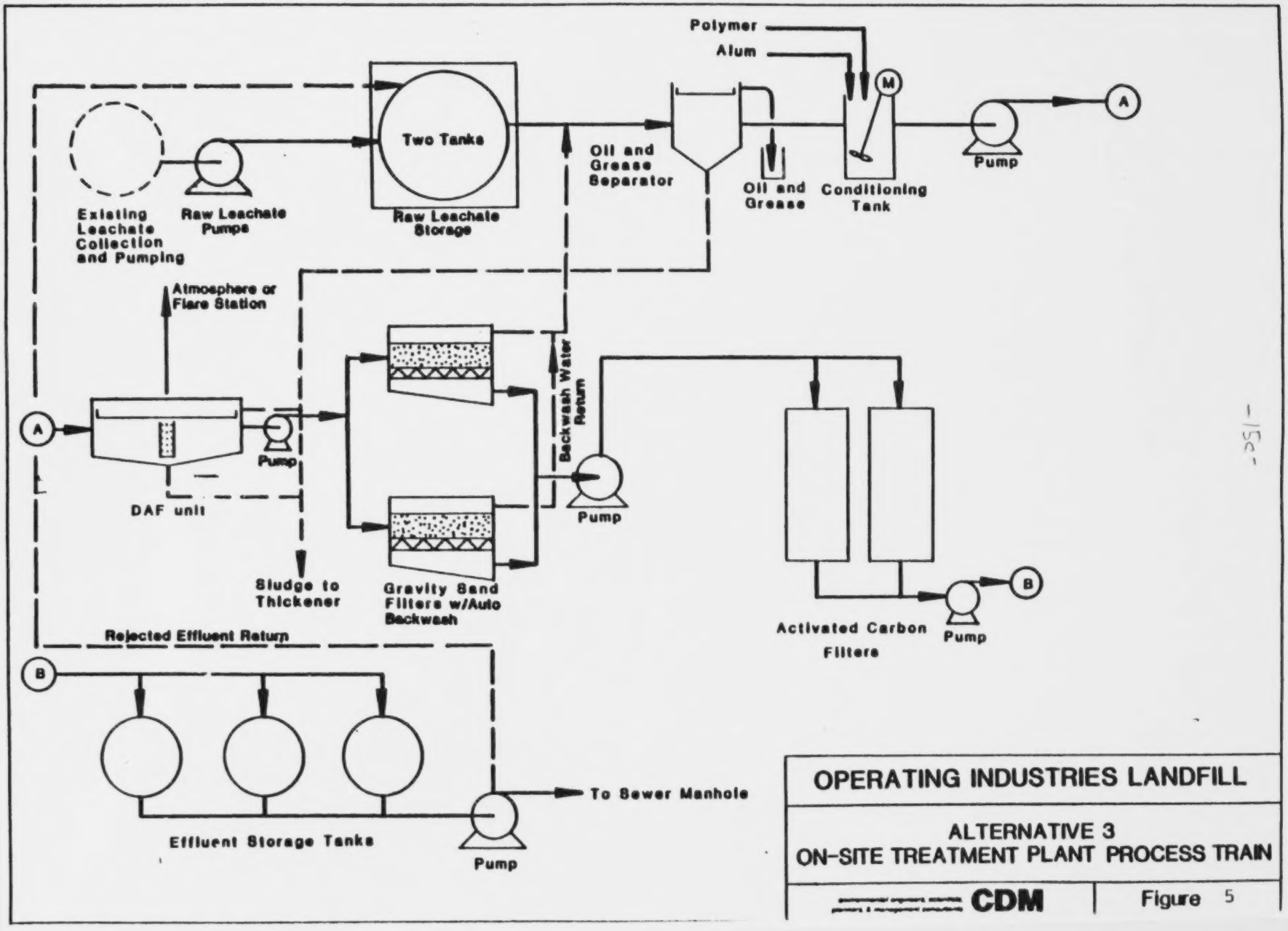


OPERATING INDUSTRIES LANDFILL

ALTERNATIVE 2
ON-SITE TREATMENT PLANT PROCESS TRAIN

CDM

Figure 4



OPERATING INDUSTRIES LANDFILL

ALTERNATIVE 3
ON-SITE TREATMENT PLANT PROCESS TRAIN

CDM

Figure 5

carbon adsorption unit is utilized for the removal of both the volatile and semi-volatile organics. Since the GAC unit may not efficiently remove small polar organic constituents, it may not meet the discharge requirement of 15 ppb vinyl chloride which is an Applicable or Relevant and Appropriate Requirement (ARAR).

On-site treatment Alternative #5, shown in Figure 6, includes both air stripping and GAC adsorption. This process train is configured in order to achieve a level of leachate treatment that will attain discharge requirements. Air stripping is added to reduce the organic load on the GAC unit and would extend the life of the carbon. Air stripping is effective for the removal of vinyl chloride so the 15 ppb discharge requirement should be achieved.

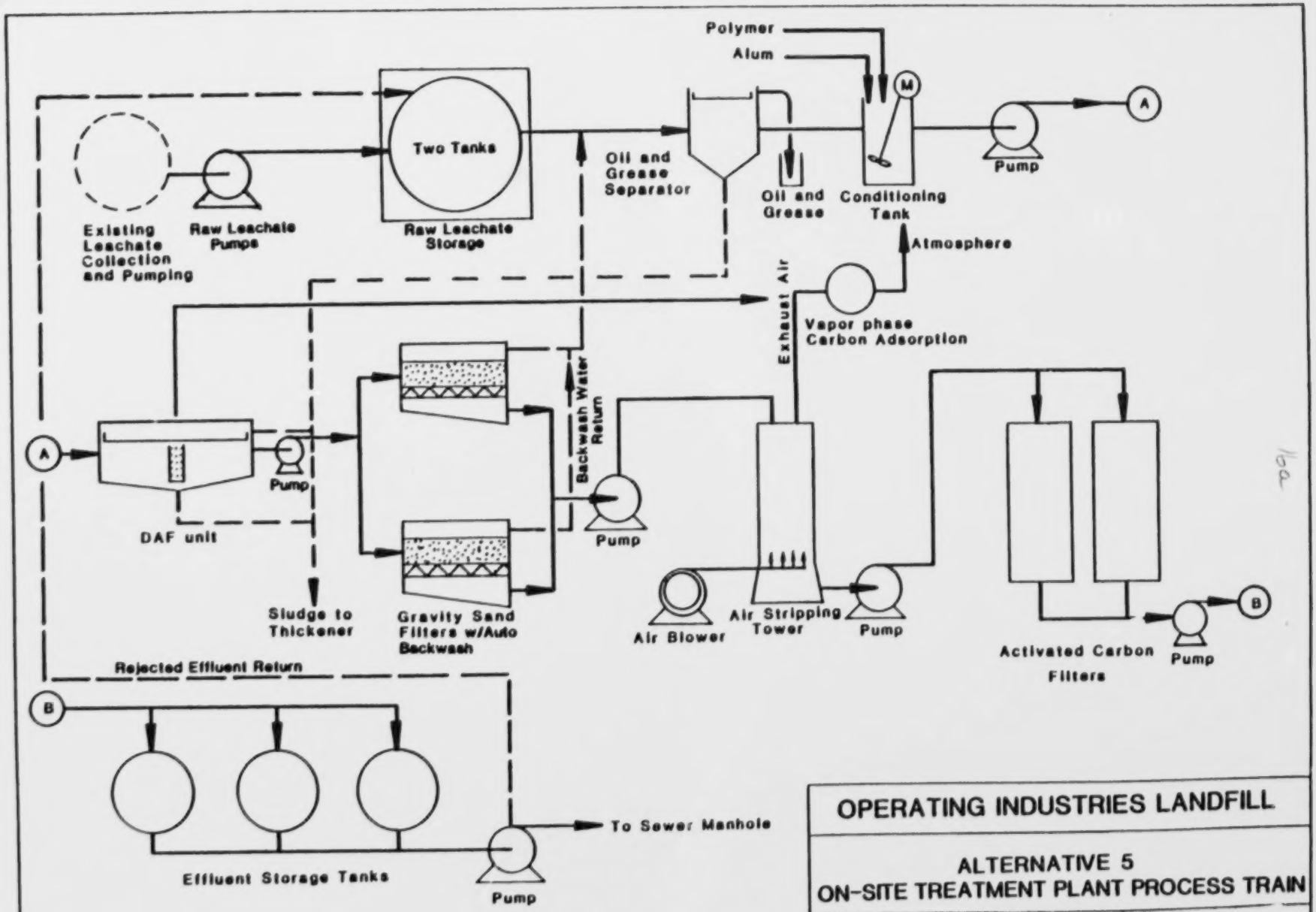
On-site treatment Alternative #6, shown schematically in Figure 7, adds ultrafiltration and reverse osmosis to the process train of on-site treatment Alternative #5. These units would allow for the production of effluent of irrigation reuse quality, and thus would exceed LACSD standards.

The leachate treatment facilities discussed in previous sections were sized to treat the liquids collected at a rate of approximately 10,000 gallons/day. In order to minimize impacts of plant operations, plant operation is planned for 40 hours per week on weekdays during business hours. If flow significantly increases, the plant would have the capability of operating up to 24 hours per day. A forty-hour week operating period requires process units capable of treating a flow rate of 30 gallons per minute (gpm). The plant would be capable of efficiently treating leachate in a flow range of 15 to 35 gpm. Thus, the plant will have the flexibility of handling variations in the rate of leachate treatment from 7,200 gallons/day to 16,800 gallons/day over an eight-hour workday. The maximum design capacity for a 35 gpm plant operating 24 hours per day is 60,400 gallons/day. For planning purposes and consistency with the final site remedy, flexibility will be incorporated into the plant layout and space requirements. The flexibility will accomodate plant expansion to a 60, to a 90, and/or to a 120 gpm plant. Operation of a 120 gpm plant 24 hours per day defines the maximum design capacity for a 1.5-acre facility of 172,800 gallons/day.

Evaluation

Off-site Treatment:

Off-site treatment was judged to be effective for the treatment of OII leachate and is readily implementable, but the long-term reliability of this alternative is questionable. The CERCLA off-site disposal policy requires a RCRA inspection of off-site treatment facilities every six months. If significant violations are found at a facility, that facility can no longer



OPERATING INDUSTRIES LANDFILL

ALTERNATIVE 5
ON-SITE TREATMENT PLANT PROCESS TRAIN

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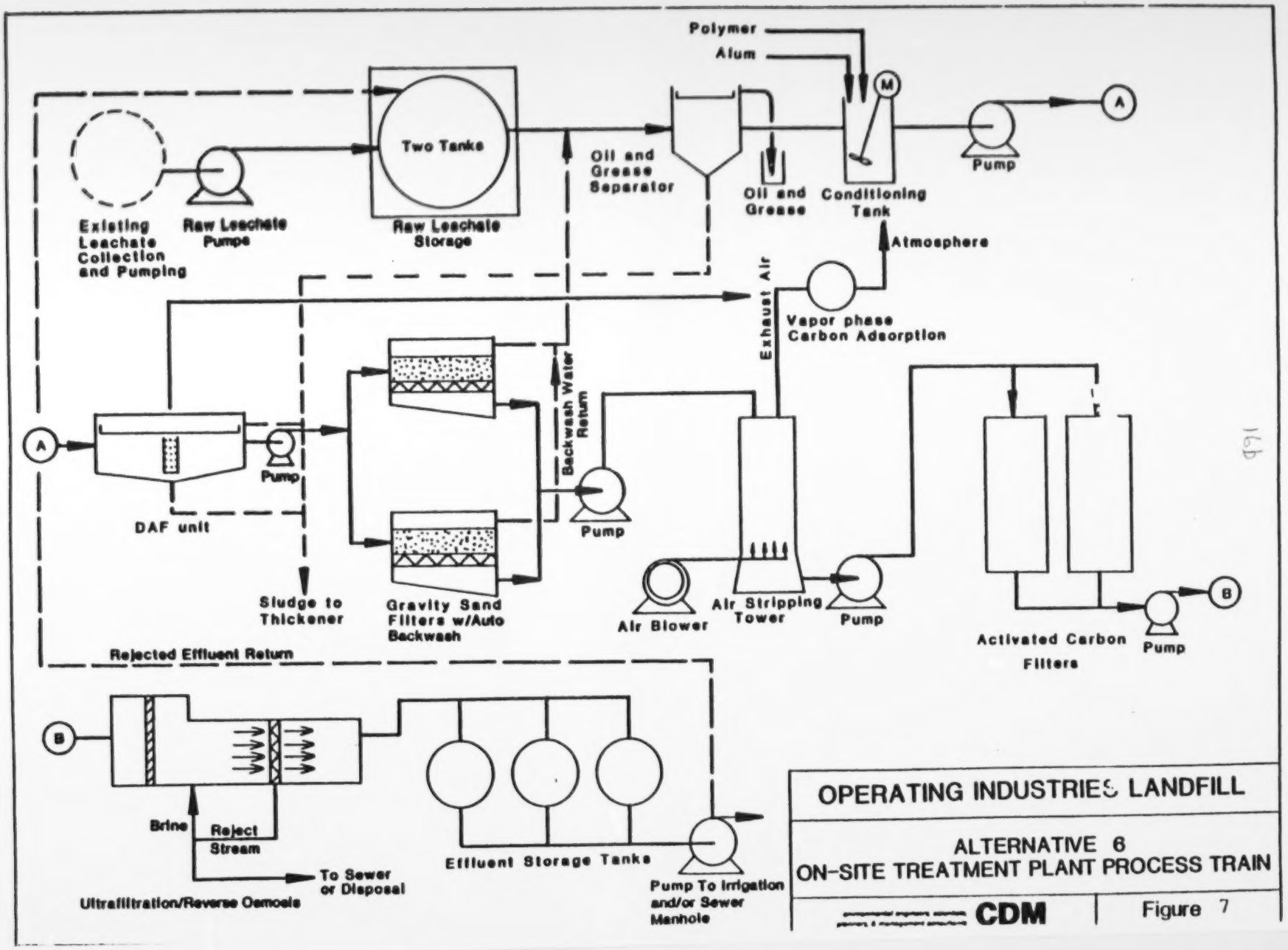
Figure 6



OPERATING INDUSTRIES LANDFILL

ALTERNATIVE 6
ON-SITE TREATMENT PLANT PROCESS TRAIN

CDM

Figure 7

be used for treatment of the OII leachate. As a private enterprise, the off-site treatment facility could cease operation at any time, especially if it becomes unprofitable. Costs of leachate treatment at the facility are set by the company and are therefore out of the control of EPA. If a facility becomes unavailable for treatment in the future, an alternative off-site treatment facility would need to be identified. Off-site treatment might then require excessive haul distances and associated increases in cost and risk. If no alternative facilities are available, construction of an on-site treatment facility would then be required. During design and construction of an on-site treatment facility, on-site storage of significant volumes of leachate may be necessary. Other leachate management options may include treatment off-site in violation of the CERCLA off-site disposal policy or land disposal in potential violation of the Solid Waste Disposal Act.

Off-site treatment could expose the public to the potential risk of direct contact with the leachate in the case of a transportation accident involving spillage. Leachate spillage at points of loading and unloading poses the greatest risk, however the public would not likely be directly exposed to these spills. Residuals, such as oil and grease, sludges and spent carbon are not as rigorously regulated at off-site treatment facilities as they are at Superfund sites. Disposition of these residuals from an off-site treatment plant could pose a potential threat to human health and the environment.

Spillage of leachate during transport could result in groundwater contamination or contamination of surface waters such as the Los Angeles River and the Rio Hondo Coastal Basins spreading ground. In addition, off-site treatment was the most costly alternative of those alternatives retained for further evaluation. The present worth cost of five years of off-site treatment was estimated at approximately $6.8 million. If incorporated as part of the final remedy, the present worth cost over 30 years is $22.2 million.

On-site Treatment:

The four on-site treatment alternatives which underwent detailed evaluation are all effective in reducing the mobility, toxicity and volume of hazardous constituents in the OII leachate and could be easily adapted to deal with variable leachate characteristics. All the processes included in these alternatives are commonly used in industry and in leachate treatment. The on-site treatment facility would be designed to maximize automation and is expected to have low maintenance requirements. The unit processes are standard or pre-packaged units and are readily implementable. All treated effluent would be batch tested prior to discharge to insure effectiveness and reliability of contaminant removal.

All of the on-site treatment alternatives would discharge treated effluent to the LACSD sewerage system. This discharge would be required to meet the discharge requirements of the LACSD. Any on-site alternative would be designed to achieve full compliance with all applicable or relevant and appropriate requirements (ARARs) of the Clean Water Act (CWA), and the Resource Conservation and Recovery Act (RCRA). Sewering of effluent from any of the on-site treatment alternatives should have no measurable impact on the receiving Joint Water Pollution Control Plant in Carson, California, or the receiving waters of the Pacific Ocean.

Industrial Wastewater Discharge permits (IWDP) would be required from the local sewering agency (Monterey Park or Montebello). The City of Monterey Park Sanitary Sewer and Industrial Waste Code requires approval of the City Council prior to issuance of an IWDP for discharge of landfill wastes into the city sewer system. Discharge to local sewers in the City of Montebello would require approval from that city.

Comparison of Alternatives

Off-site treatment is more costly than any of the on-site treatment options at a cost of approximately $6.8 million for 5 years of treatment. It also poses the greatest potential for spillage at points of loading and unloading and during transport. Spillage during transport would pose the potential for direct human contact and environmental contamination. Off-site treatment has the least long-term reliability and the greatest potential for increased future remedial action costs.

The cost of on-site treatment for a five-year period ranged from $4.1 to $5.3 million for the range of treatment processes. All on-site treatment alternatives would be constructed to minimize the potential for spillage, and all spillage could be contained within the facility. Leachate would be treated to meet discharge standards, and any air emissions from these alternatives would be controlled with vapor phase carbon or thermal destruction technologies to protect public health and the environment. Concerns about leachate spillage during transport and long-term reliability would be eliminated by choosing an on-site alternative. If leachate treatment is incorporated as part of the final remedy for the site, the cost differential between off-site and on-site treatment using present worth costs over a 30-year period is approximately $10.3 million.

Comparison of On-site Treatment Processes:

Four different treatment processes, Alternatives 2, 3, 5, and 6, underwent detailed evaluation in the FS. Different treatment processes were used to achieve varying degrees of treatment, effectiveness, and efficiency. All four alternatives

include oil and grease separation, chemical addition, dissolved air flotation (DAF), and sand filtration as the initial treatment processes. The oil and grease separation removes nonemulsified oil and grease from the leachate. Settleable sludge solids are also removed in this portion of the process. Coagulants are then mixed with the leachate to facilitate removal of emulsified oil and grease and heavy metals. DAF is then used to remove flocculated oil and grease which are skimmed off the top of the flotation tank and heavy metals which are collected as sludges at the bottom. Gravity sand filters are used to capture floc and other suspended solids not removed by the DAF unit.

Alternative #2:

In alternative #2, air stripping is added to the treatment process. Air stripping is a unit process in which liquid and air are brought into contact to remove volatile substances from the liquids (i.e., volatile organics and sulfides). Several volatile organic compounds, such as vinyl chloride, found in OII leachate have high Henry's Law constants, and thus would be readily removed. However, the presence of a complex matrix of toxic organic substances in the leachate, including less volatile pollutants such as phenols and phthalate esters, could prevent an air stripping system alone from consistently meeting LACSD standards for total toxic organics. For this reason Alternative #2 was not considered as effective as those alternatives employing both air stripping and granular activated carbon adsorption.

Alternative #3:

Alternative #3 employs granular activated carbon (GAC) adsorption following the initial treatment process. Activated carbon removes organic contaminants from water by the process of adsorption. Activated carbon may not effectively remove the smaller, polar organic constituents in the leachate, such as methylene chloride and vinyl chloride, due to the existence of a complex organic matrix in the waste and the resulting competitive adsorption effects. Alternative #3 should provide organic removal as required to meet the LACSD total toxic organic effluent discharge limitation of 1.0 mg/l. However, GAC alone may not achieve the 15 ppb vinyl chloride requirement. The use of GAC without an air-stripping unit would increase carbon usage due to higher organic loading and therefore increases cost due to GAC replacement. For these reasons, Alternative #3 was not considered as effective as alternatives employing both air stripping and GAC units.

Alternative #5:

Alternative #5 employs air stripping and GAC adsorption

after the initial treatment process. This alternative should reduce carbon consumption and associated costs. This system provides for protection of public health by capturing toxic constituents present in off-gases from the air stripping tower in the vapor phase carbon adsorption column. By utilizing both the air stripping and GAC processes, this alternative is expected to achieve the LACSD discharge requirements for both vinyl chloride and total toxic organics. Thus this alternative is expected to comply with the requirements of the Federal Clean Water Act which is enforced by the LACSD. The air emmisions control systems will be designed to comply with the requirements of the Clean Air Act which is enforced by SCAQMD, specifically Regulation 13 regarding new source reviews, and also the state ARAR Rule 402, entitled the nuisance provision. This alternative would also comply with applicable requirements of Subtitle C of the Solid Waste Disposal Act, and with applicable regulations codified under Title 22 of the California Administrative Code. This alternative was considered to be effective for achieving all ARARs.

Alternative #6:

Alternative #6 adds ultra-filtration/reverse osmosis to the Alternative #5 process train. This process would remove total dissolved solids from one portion of the treated leachate and concentrate it in the other portion, creating two products: irrigation-quality water for use on site and a brine waste high in TDS requiring disposal in the LACSD sewer system. Due to the high concentration of dissolved solids in the OII leachate, approximately 60% waste brine and 40% irrigation quality water would be produced per unit volume of treated leachate processed by the UF/RO unit. Due to the additional design requirements and plant maintenance activities associated with UF/RO and the additional cost of approximately $500,000 for 5 yrs of leachate treatment, Alternative #6 was not considered as effective as Alternative #5. This alternative was also considered to be effective for achieving all ARARs.

Table 2 presents a summary of the detailed evaluation of alternatives.

TABLE 2

INTERIM LEACHATE TREATMENT ALTERNATIVE SUMMARY FOR THE OII LANDFILL SITE

ALTERNATIVE	COST ($1,000) CAPITAL 5 YR	COST ($1,000) PRESENT WORTH @ 6% 5 YR	COST ($1,000) PRESENT WORTH @ 6% 30 YR	PUBLIC HEALTH CONCERNS	ENVIRONMENTAL CONCERNS	TECHNICAL CONCERNS	COMMUNITY RESPONSE CONCERNS	INSTITUTIONAL CONCERNS
NO ACTION	---	---	---	Unacceptable exposure to leachate migrating off-site. Potential health risks due to leachate exposure.	Potential for widespread environmental contamination.	---	Unacceptable	Does not meet ARARs.
OFF-SITE TREATMENT	30	6,000	22,179	Potential for human exposure due to spillage of leachate during loading, unloading, transport and treatment. Exposure to air emissions.	Potential for surface and groundwater contamination due to spillage during transport.	Reliability	Acceptable	Meets ARARs if facility operated in compliance. No control over compliance.
ON-SITE TREATMENT								
2) Chemical add., BAF, filtration, air stripping	1,750	4,087	9,750	Potential for spills during treatment, however, spills would be fully contained at the facility.	Minimal effects during construction.	May not remove organics to an acceptable level.	Plant location, aesthetic impact, noise, odors, safety.	May not meet ARARs. May not receive approval for discharge.
3) Chemical add., BAF, filtration, carbon adsorption	1,772	5,039	12,827	Potential for spills during treatment, however, spills would be fully contained at the facility.	Minimal effects during construction.	Less efficient performance without air stripping.	Plant location, aesthetic impact, noise, odors, safety.	Meets ARARs.
5) Chemical add., BAF, filtration, air stripping, carbon adsorption	1,871	4,822	11,894	Potential for spills during treatment, however, spills would be fully contained at the facility.	Minimal effects during construction.	None	Plant location, aesthetic impact, noise, odors, safety.	Meets ARARs.
6) Chemical add., BAF filtration, air stripping, carbon adsorption, U.F., R.O.	2,193	5,323	12,881	Potential for spills during treatment, however, spills would be fully contained at the facility.	Minimal effects during construction.	Possible membrane fouling problems. Low permeate recovery rate. Brine disposal.	Plant location, aesthetic impact, noise, odors, safety.	Exceeds ARARs for sewer disposal. May have difficulty attaining reuse standards.

--- = not applicable

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SITING ANALYSIS OF AN ON-SITE TREATMENT FACILITY

Description of Alternatives:

In considering the construction of a new treatment plant at the OII landfill site, five potentially feasible locations were identified. The approximate locations and direction and distance to points of sewering are shown in Figure 8. Location A is on the south parcel on an area south of the existing GSF facility and flare station. Location B is on the parcel north of the Pomona Freeway. Location C is on land owned by Chevron Corporation abutting the eastern boundary of the landfill site in the city of Montebello. Location D is on the top of the landfill. Location E is on Southern California Edison Property adjacent to the western boundary of the north parcel.

It is estimated that a site area of approximately 60,000 ft^2 (1.4 acres) would be required to provide the space for a 30 gpm facility with room for expansion to a 120 gpm facility. In estimating the size requirements, the following factors were considered:

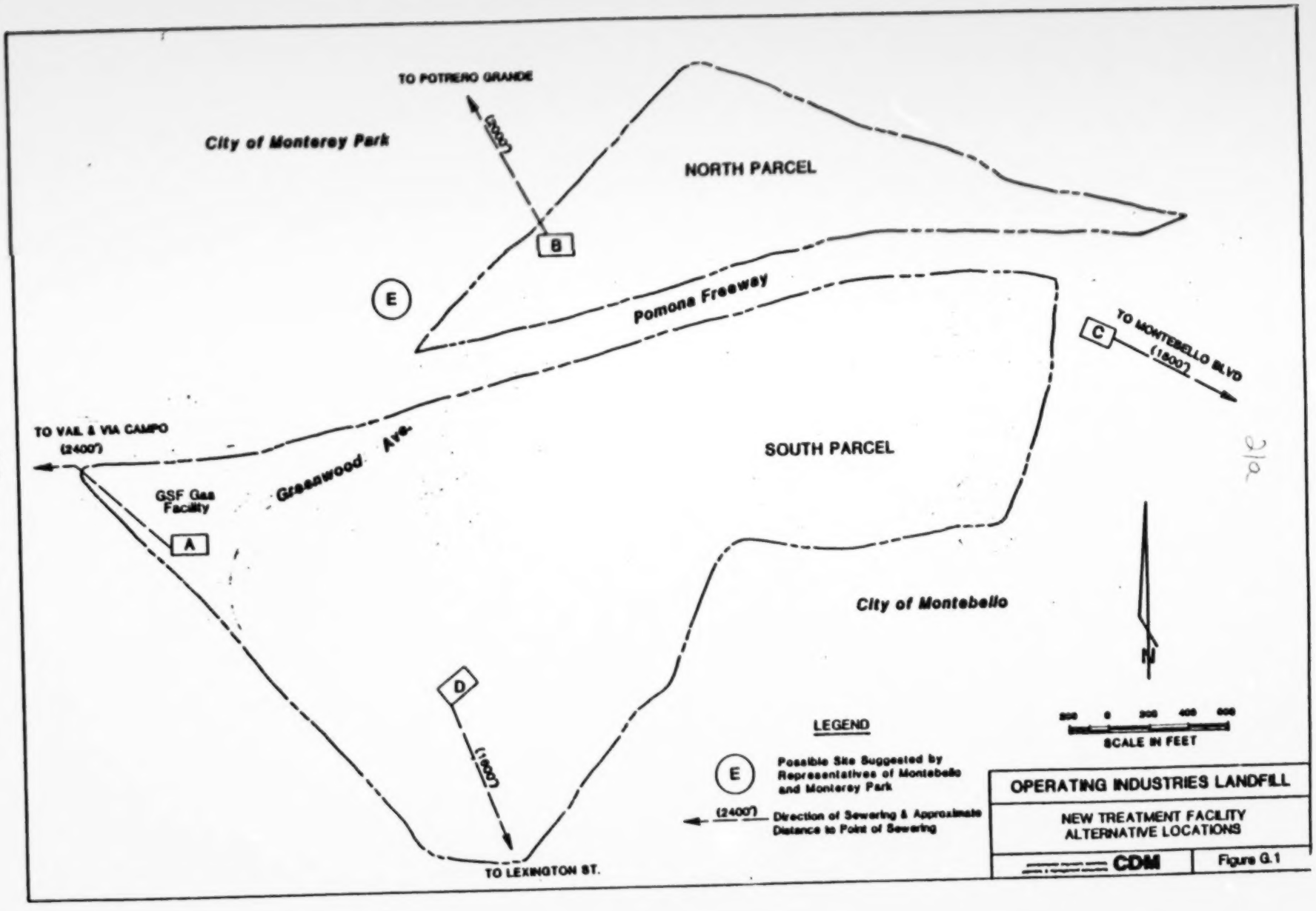
- Space for unit processes and influent and effluent storage for a 120 gpm facility.
- Space for sludge handling.
- Provision for a clean area for the laboratory and office and the unloading of chemical shipments.
- A decontamination area and an area for equipment wash-down such as trucks leaving the sludge handling area.

The treatment plant processes and unit sizes are the same for all locations and are based upon on-site Treatment Alternative #5.

Site Location Considerations:

Location A was originally considered but was eliminated because:

- The site is within 100 feet of residences in the City of Montebello. Residents are concerned with the proximity of this site location to their homes. Major concerns are noise, odors, and safety.


TO POTRERO GRANDE
(2000')
City of Monterey Park
NORTH PARCEL
B
E
Pomona Freeway
C
TO MONTEBELLO BLVD
(1800')
TO VAIL & VIA CAMPO
(2400')
Greenwood Ave.
SOUTH PARCEL
GSF Gas Facility
A
City of Montebello
N
D
(1900')
LEGEND
E
Possible Site Suggested by Representatives of Montebello and Monterey Park
(2400')
Direction of Sewering & Approximate Distance to Point of Sewering
SCALE IN FEET
TO LEXINGTON ST.
OPERATING INDUSTRIES LANDFILL
NEW TREATMENT FACILITY ALTERNATIVE LOCATIONS
CDM
Figure G.1

G-2

- Construction of facility at this location may conflict with space requirements for future remedial actions.

- The site is the minimum size needed for current design specifications and provides little room for expansion.

Location B is considered to be a feasible location and is the preferred location for the following reasons:

- This location is a flat site located several thousand feet from residential neighborhoods. It is buffered from residential areas by the Pomona Freeway to the south and the Southern California Edison easement property to the north.

- Facility will require approximately 1.4 acres out of the 45-acre North Parcel. This would allow for potential future business development by the City of Monterey Park on property remaining after the final remedy is completed.

- Leachate may be piped across or underneath the Pomona Freeway in accordance with Caltrans regulations and requirements.

- The site is located within the OII Superfund site boundaries, and would therefore require no acquisition of property, access, or permit.

Location C was eliminated as a feasible alternative due to the following factors:

- This site would require the acquisition of approximately 1.4 acres of land from the Chevron Corporation (not including access road). Acquisition of land and permit requirements could delay implementation of the remedy.

- This site is located 3500' to 4000' from the current leachate collection area. A leachate pipeline to this site would be located close numerous residences within the City of Montebello.

Location D was considered but was eliminated for the following reasons:

- This site would require a special geotechnical study to determine a suitable location for the unit processes and storage tanks.

- Special design considerations would be required to accomodate anticipated differential settling. The locations and magnitude of settling are not predictable and could cause serious problems in maintaining the integrity of the facility.

- This location may not be compatible with the final remedy for the site.

- Overall, siting at Location D may delay the implementation of the treatment facility and add costs to the final remedial action process.

Location E was eliminated as a feasible alternative as:

- The site is located on Edison-owned property and would therefore require acquisition of land from Southern California Edison. Land acquisition and permit requirements could significantly delay implementation of the remedial action.

- A treatment facility at this location could result in potential disruption of Southern California Edison power routing as this property is a high voltage transmission line corridor adjacent to Edison's Mesa Substation. This substation has been identified by Edison as a major hub of the company's electrical grid system.

SELECTED REMEDY

Description:

EPA's selected remedy for leachate management is on-site treatment using the processes presented in Alternative #5 of the Leachate Management Feasibility Study. The on-site treatment facility will be used to treat leachate and other hazardous liquids collected at the OII site during the period before the final remedy for the site is implemented. The facility will be constructed at location B located on the north parcel of the OII site as presented in the Leachate Management Feasibility Study. The treatment facility will be designed to provide the flexibility required to treat varying qualities of leachate and to allow for expansion to treat increased volumes of hazardous liquids, and other liquids requiring treatment. Treatment at the facility could continue after implementation of the final remedy if it is included as part of that remedy.

Prior to initiation of design of the treatment facility a pre-design study will be performed. Characterization of leachate and condensate will be updated and parameters will be established to ensure that the treatment facility will have the flexibility to treat varying qualities of leachate and potential future liquids from the site. Additional treatability tests will be performed to determine the proper sizing and loading of the process units, and to allow optimization of the treatment plant design. Tests to determine the nature and proper disposition of oil and grease, sludge, and skimmings will also be performed.

On-site treatment will be used during the interim period primarily as source control for treatment of leachate and condensate from the site. The plant could also be used for certain RI-derived wastes, i.e. decontamination water and hydrogeology pump test water. The plant has the potential to be used in the management of contaminant plume migration in the future, if groundwater treatment is required.

The on-site treatment facility will be constructed as a 30 gallon per minute plant with an operating range of 15 to 35 gallons per minute. The treatment plant process units will be mounted on individual concrete pads and configured to allow for plant expansion to 60 gpm, 90 gpm, or 120 gpm. The plant will be constructed on approximately 60,000 ft^2 (1.4 acres) to accommodate future expansion to 120 gpm. Influent leachate storage of 100,000 gallons will be provided. Treatment plant effluent will be batched for testing prior to discharge to the LACSD sewer system. Appropriate noise and odor abatement features and landscaping will be incorporated into the design of the treatment plant.

The five-year present worth cost of the selected remedy is $4.8 million. This represents a capitol cost of $1.9 million and an annual operations and maintenance cost of approximately $700,000. The selected remedy is the most-effective remedy since it is the least costly alternative which should achieve ARARs.

Target treatment level:

Leachate will be treated to achieve the Los Angeles County Sanitation District (LASCD) Discharge Requirements. Treated effluent will be discharged to the Joint Water Pollution Control Plant in Carson, CA. Table 3 lists the LACSD discharge requirements.

Residuals:

If skimmed oil and grease are determined not to be hazardous, the material will be disposed of by a waste oil company. If the skimmings are determined to be hazardous, they will be disposed of at a RCRA facility in compliance with the CERCLA off-site disposal policy.

Once the carbon adsorptive capacity of the GAC units has been fully utilized, the carbon will be disposed of or regenerated. Pick-up of spent carbon and off-site regeneration is a service frequently offered by suppliers of activated carbon and could be used for this project.

Sludge is expected to be produced at a rate of approximately 0.5% by volume of total leachate. If the sludge is determined to be hazardous, it will be disposed of off-site in compliance with the CERCLA offsite disposal policy. Currently, hazardous sludges produced through treatment of CERCLA wastes are hauled to Chemwaste in Arlington, Oregon or USPCI in Murray, Utah. A California facility may be available by the time a treatment plant is constructd.

Air emissions from the facility such as emissions from the DAF unit and the air stripper will be controlled using vapor phase carbon adsorption and thermal destruction. Vapor phase carbon adsorption and thermal destruction technologies will be evaluated during the pre-design phase of the project. Emissions from the facility will comply with South Coast Air Quality Management Districts "New Source Review" requirements which require that emissions pose a risk of less than 10^{-6} to the community.

The treatment facility is intended to be utilized until implementation of the final remedy for the site, or until EPA determines it is no longer needed for the treatment of liquids from the OII Superfund site at which time the treatment facility would be dismantled. Only hazardous liquids and other liquids requiring treatment that are

TABLE 3

EFFLUENT DISCHARGE LIMITS
FOR
CENTRALIZED HAZARDOUS WASTE TREATMENT FACILITIES

LOS ANGELES COUNTY SANITATION DISTRICT

Parameter[1]	Limitation (mg/l) (maximum for any time)
Arsenic (total)	3.0
Cadmium (total)	0.69
Chromium (total)	2.77
Copper (total)	3.38
Lead (total)	0.69
Mercury (total)	2.0
Nickel (total)	3.98
Silver (total)	0.43
Zinc (total)	2.61
Cyanide (total)	1.20
Sulfides (dissolved)	0.1
Total toxic organics[2]	1.0
Oil and grease	10.0
Vinyl Chloride	0.015
Radioactivity[3]	

[1] Limitations for other organic parameters and metals will be set as needed.

[2] Total toxic organics (a list of 111 compounds specified by LACSD) are to be analyzed using EPA Methods 601 and 602. Additional analysis using EPA Method 625 may be required.

[3] In accordance with Title 17, California Administrative Code, Section 30287. Generally limited to 400 pCi/L above natural background.

generated from the OII site will be treated at the facility. The facility will be designed so that it can be integrated into the final remedy if continuing treatment of hazardous liquids is required.

Statutory Determinations

Protectiveness:

The treatment facility will be protective of public health and the environment. Leachate will be piped directly to the facility to reduce the risk to public health and environment associated with truck transport of the leachate. Batch testing of treated effluent will insure that discharge requirements are met. Air emissions from the facility will be controlled with best available technologies and will comply with SCAQMD regulations to achieve a risk level of less than 10^{-6}. Residuals from the treatment processes will be regulated under the CERCLA off-site disposal policy. Construction of the facility will not pose any significant risk to the community or construction workers. Safety features at the facility will be designed to prevent community exposure to leachate spills.

The facility will utilize proven processes and will be reliable for both short- and long-term use. The potential need for replacement of this remedy is very low.

Consistency With Other Laws:

Federal ARARs

EPA intends to comply with federal ARARs for any off-site or on-site treatment or disposal alternative for remedial actions taken at the OII site. The majority of these laws are administrated by State or local agencies. Subtitle C of the Solid Waste Disposal Act, entitled the Resource Conservation and Recovery Act (RCRA), would apply to on-site or off-site treatment or disposal facilities.

Regulations for new facilities involved in the treatment, storage, or disposal of hazardous wastes (40 CFR 264), developed from RCRA, are applicable to any new on-site treatment facility or surface impoundment.

The general pretreatment requirements to the Federal Clean Water Act would apply to any alternative which involves the ultimate disposal of collected OII leachate, whether treated untreated, to a publicly-owned treatment works (POTW). Compliance with these standards is enforced by the Los Angeles County Sanitation District (LACSD).

The applicability of the Clean Air Act to an on-site treatment or disposal facility was determined to be applicable. A new source review provision of the act would apply to any new source of emissions and would be enforced by the SCAQMD.

State ARARs

Applicable or relevant and appropriate state requirements as well as local requirements for an on-site or off-site leachate treatment or disposal facilities were identified. It is the intent of the EPA to comply with state ARARs for any on-site or off-site treatment or disposal alternative. These ARARs were based on input from the California Department of Health Services (DOHS), California Waste Management Board (CWMB), Los Angeles County Sanitation Districts (LACSD), South Coast Air Quality Management District (SCAQMD) and the Regional Water Quality Control Board (RWQCB).

The California Department of Health Services implements the California RCRA program which would apply to remedial alternatives involving the treatment, storage, or disposal of hazardous wastes. The California RCRA program is very similar to the federal RCRA program. Regulations are codified under Title 22 of the California Administrative Code.

The Los Angeles County Sanitation District (LACSD), along with the local city sewering agency, regulates discharges to its sanitary sewer system, which serves the area surrounding the OII site. The LACSD sets effluent discharge standards which must be met for liquid waste discharges to their sewer system in order to assure compliance with the Federal Clean Water Act. In order to obtain approval for connection to the off-site sanitary sewerage system from the local sewering agency (Monterey Park or Montebello) and LACSD, hydraulic capacity must be available and waste treatment capable of consistently meeting discharge limitations must be provided. The LACSD discharge limitations for any treatment facilities are presented in Table 4.

The South Coast Air Quality Management District regulates emissions to the atmosphere. Several specific provisions have been identified which would apply to on-site remedial actions at OII. Rule 402, entitled the nuisance provision, is a general prohibition against excessive emissions which could cause adverse effects including odors. Regulation 13 is a new source review provision which mandates that the net emissions from any new source cannot exceed 75 pounds of organics per day.

Cost-effectiveness and Utilization of Permanent Solutions:

The selected remedy offers the best combination of

effectiveness, implementability, and cost in comparison to the other alternatives. This is the least costly alternative which should achieve ARARs. It offers the same, or greater, degree of protection and reliability than any of the other alternatives. All treatment process are proven technologies and can be readily implemented. Off-site leachate treatment will continue as part of the Site Control and Monitoring Operable Unit Remedial Action during the construction of the selected remedy.

The selected remedy is cost-effective and utilizes treatment technologies to the maximum extent practicable.

Implementation Schedule:

Conduct Pre-Design Study 12/87 -3/88

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Design Facility 3/88 - 9/88

°

Construct Facility 9/88 -3/89

°

Shakedown Test of Facility 3/89 - 4/89

°

Begin Plant Operation 4/89